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THE
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ZOOLOGICAL SOCIETY
OF PHILADELPHIA

THIRTY-NINTH ANNUAL REPORT

OF THE

BOARD OF DIRECTORS

OF THE

ZOOLOGICAL SOCIETY
OF PHILADELPHIA.

(INCORPORATED MARCH 21ST, 1859.)

READ AT THE ANNUAL MEETING OF THE MEMBERS AND LOAN-
HOLDERS OF THE SOCIETY.

APRIL 27th, 1911.

PHILADELPHIA:
PRESS OF ALLEN, LANE & SCOTT,
1211-1213 Clover Street.
1911.

MAY 19 1911

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THE
ZOOLOGICAL SOCIETY OF PHILADELPHIA.
(FAIRMOUNT PARK.)

BOARD OF DIRECTORS:

ELECTED BY THE SOCIETY.

CHARLES B. PENROSE, M. D., <i>President.</i>	D. M. BARRINGER, WILLIAM D. WINSOR, NORTON DOWNS, M. D., W. B. CADWALADER, M. D., <i>Secretary.</i>
CHARLES M. LEA, SAMUEL G. DIXON, M. D., <i>Vice-President.</i>	
CHRISTIAN C. FEBIGER, <i>Vice-President.</i>	ROBERT G. LE CONTE, M. D., HENRY PRATT McKEAN, CLEMENT B. NEWBOLD, CHARLES S. W. PACKARD, <i>Treasurer.</i>
THOMAS BIDDLE, M. D., THOMAS DEWITT CUYLER, OWEN WISTER, CHARLES PLATT, JR.,	GEORGE L. HARRISON, JR.

ELECTED BY THE CITY COUNCILS.

HAROLD ROSENGARTEN, ALFRED GRATZ.

SUPERINTENDENT OF THE GARDENS.

ROBERT D. CARSON.

PATHOLOGIST.

HERBERT FOX, M. D.

SOLICITOR.

W. W. MONTGOMERY.

REPORT

OF THE

BOARD OF DIRECTORS.

PHILADELPHIA, April 27th, 1911.

The Board of Directors of the Zoological Society of Philadelphia presents to the members and loanholders its thirty-ninth annual report, for the year ending February 28th, 1911.

GENERAL AFFAIRS AND FINANCES.

The number of members at the close of the year was:—

Annual members.....	182
Life members.....	1,277
Corresponding members.....	6
Honorary members.....	14
Perpetual members.....	248
Junior members.....	43
<hr/>	
Total members.....	1,770

The following is a report in detail of the admissions and receipts for the year:—

Adults (paying at gates).....	118,490
Children (paying at gates).....	36,840
Members (including life and annual members, loanholders' annual, and complimentary annual tickets)	854
Loanholders' single tickets.....	8,239
Free admissions (charitable institutions, donors' tickets, &c.)*.....	4,256
Coupon tickets.....	129
Excursion tickets.....	2,769
<hr/>	
	171,577

* In addition to these, 175,000 tickets were issued to the Board of Education, for the admission of pupils of the Public Schools.

*Monthly Record of Receipts from Admissions for 1910-1911
with corresponding account for 1909-1910.*

MONTH	1909-1910	1910-1911	COMPARISON	
March.....	\$1,075 80	\$1,135 55	Increase....	\$59 75
April.....	2,159 60	1,559 05	Decrease....	600 55
May.....	2,457 85	3,282 95	Increase....	825 10
June.....	2,098 10	2,187 90	"	89 80
July.....	3,164 55	2,833 25	Decrease....	331 30
August.....	4,619 20	4,067 15	"	552 05
September..	3,534 95	3,467 20	"	67 75
October....	2,579 30	2,885 15	Increase....	305 85
November..	1,556 15	1,300 10	Decrease....	256 05
December..	695 50	616 85	"	78 65
January....	725 80	653 90	"	71 90
February...	568 80	1,116 85	Increase....	548 05
	\$25,235 60	\$25,105 90	Decrease....	\$129 70

THE GARDENS.

The total number of animals exhibited in each class during the year was:—

Mammals.....	500
Birds.....	967
Reptiles.....	685
Amphibians.....	44
	2,196

The species exhibited in the Garden for the first time were as follows:—

Blyth's Monkey (*Presbytis barbii* Blyth).

Hab., Assam, Burma.

A female purchased on October 8th.

Talapoin Monkey (*Cercopithecus talapoin* Schreber).

Hab., West Africa.

A male of this rare and little known species was received on September 20th.

Variegated Cebus (*Cebus variegatus* Geoffroy).

Hab., Eastern Brazil.

A male purchased on September 13th was said to have been obtained in Bahia.

Dormouse Dwarf Lemur (*Microcebus myoxinus*).

Hab., Madagascar.

Two purchased on November 10th.

White-whiskered Paradoxure (*Paradoxurus leucomystax* Grav).

Hab., Malay Peninsula, Borneo and Sumatra.

A pair of this handsome species, the largest of its genus, was obtained on April 22d from Singapore.

Cape Ratel (*Mellivora ratel* Sparrman).

Hab., South Africa.

A fine specimen of this seldom exhibited species was procured on June 28th.

Long-tailed weasel (*Putorius longicandus* Bonaparte).

Hab., Kansas to British America.

One specimen from Harper, Kansas, was received on June 29th.

Japanese Bear (*Ursus japonicus* Schlegel).

Hab., Japan.

A fine young male and female direct from Kobe were purchased on August 13th.

Common Dormouse (*Muscardinus avellanarius* Linn.).

Hab., Europe.

A pair received on September 29th.

Squirrel-tailed Dormouse (*Glis glis* Linn.).

Hab., Europe.

A single specimen received October 4th.

Oak Dormouse (*Glis dryas* Schreber).

Hab., Europe and Asia.

A pair received on October 4th.

Egyptain Spiny Mouse (*Acomys cohirinus* Geoffroy).

Hab., Egypt and Syria.

A male and female of these curious little creatures, resembling diminutive hedgehogs, were purchased on July 22d.

Larger Egyptian Gerbille (*Gerbillus pyramidum* Geoffroy).

Hab., North Africa.

A pair of these "Pyramid" Mice was purchased on October 8th.

Common Hamster (*Cricetus cricetus* Linn.).

Hab., Northern Asia.

Three specimens added to the collection on September 22d.

Great African Jerboa (*Jaculus orientalis* Erxleben).

Two specimens, received on October 4th.

Crimson Waxbill (*Estrilda phaeton* Hombr. and Jacq.).

Hab., North Australia.

A pair purchased on September 13th.

St. Helena Waxbill (*Estrilda astrild astrild* Linn.).

Hab., South Africa and St. Helena.

A single specimen received September 13th.

Elegant Finch (*Phonipara lepidus* Jacquin).

Hab., Greater Antilles.

Two received October 4th.

Black-headed Sibia (*Malacias capistrata* Vigors).

Hab., Himalaya Mountains.

One specimen received April 22d.

Golden-fronted Woodpecker (*Malanerpes aurifrons* Wagler).

Hab., N. E. Mexico and South Texas.

One received in immature plumage on October 4th.

Striated Coly (*Colius striatus* Gmelin).

Hab., South Africa.

Two received on June 28th were the first representatives of this group of avian acrobats exhibited in the collection.

Indian Koel (*Endynamis honoratus* Vig. and Hors.).

Hab., Southeastern Asia.

A male of this large and handsome species was purchased on June 18th.

Red-topped Amazon (*Chryotis rhodocorythra* Salvadori).

Hab., Brazil.

A fine specimen of this rare parrot was purchased on September 13th.

Double-striped Thicknee (*Ædicnemus bistratus* Wagler).

Hab., Central America and Mexico.

A pair received on August 13th. These curious birds, which, although much larger, resemble and are related to the plovers, are semi-nocturnal and are of economic value because of their insect-eating habits, on account of which they have received some degree of protection.

Black spur-winged Goose (*Plectropterus niger* Sclater).

Hab., Southeast Africa.

A pair of this fine species was received on December 15th.

Ross' Goose (*Anser rossi* Baird).

Hab., western North America.

Two beautiful specimens were purchased on May 3d.

Porose Crocodile (*Crocodylus porosus* Schn.).

Hab., Southern Asia and Northern Australia.

A specimen, about five feet long, of this, when fully adult,

largest of existing reptiles, was obtained on August 11th.

Cuban Spiny Lizard (*Sceloporus carinatus* Gray).

Hab., Cuba.

Two received on October 4th.

Wagler's Viper (*Lachesis wagleri* Boié).

Hab., Indian Archipelago.

A fine example of this large and, although variable, always

brilliantly-colored snake was obtained from Signapore

on August 13th.

Among the many donations during the year were: A young Brazilian ocelot sent from Port-of-Spain, Trinidad, by Mr. Frank Bond of Philadelphia; six wild cats trapped in South Carolina and shipped to the Garden by Dr. Norton Downs, a director of the Society, who also presented a fine young doe Virginia deer; the Eskimo dog "Peary" from Dr. R. N. Keely, Brown's Mills-in-the-Pines, New Jersey; two fully matured golden eagles, one trapped in Wyoming on the border of the Yellowstone National Park by Mr. John Law Dallam of Philadelphia and the other obtained in Virginia by Mr. James Green of Philadelphia; a pair of Sebastopol geese by Mrs. L. S. M. Robinson of Paoli, Pennsylvania, and fourteen cerberus snakes from Mr. F. Mitchell of New York City.

In addition to the species previously mentioned as having been in the collection for the first time the following purchased specimens are worthy of special mention:—

A Himalayan thar was obtained in April from the Washington Zoological Park; a large male hamadryas baboon, an exceptionally fine pair of adult isabelline gazelles, a female Somali ostrich, as a mate for a male of this species, and a one-

wattled cassowary were acquired in May; a pair of sable antelopes and a female Chapman's zebra in June; two Nile crocodiles and a large Egyptian cobra in August; a fine young Malayan tapir and a pair of Coquerel's dwarf lemurs in September; and an adult female Barbary ape in February, the latter as a mate for the male which has been in the collection for a number of years.

The following is a full list of the births during the year:—

- 1 grivet monkey (*Cercopithecus sabæus*), ♂, March 21st.
- 1 monkey, hybrid between *Ceræcopithecus pygerythus* ♂ and *C. sabæus* ♀, February 5th.
- 1 rhesus macaque (*Macacus rhesus*), ♂, September 3d.
- 1 yellow baboon (*Papio cynocephalus*), ♂, February 2d.
- 4 pumas (*Felis concolor*), 1, July 10th; 3, November 5th.
- 9 common raccoons (*Procyon lotor*), 3, March 26th; 4, April 7th; 2, June 11th.
- 2 American flying squirrels (*Sciuropterus volucella*), April 4th.
- 1 American bison (*Bison bison*), ♂, October 28th.
- 5 Indian antelopes (*Antilope cervicapra*), ♀, March 29th; ♂, June 30th; ♀, August 5th; ♀, October 30th; ♂, January 10th.
- 1 white-bearded gnu (*Connochatis albojubatus*), ♂, June 22d.
- 2 aoudads (*Ovis tragelaphus*), April 17th.
- 1 American elk (*Cervus canadensis*), ♀, October 19th.
- 2 Japanese deer (*Cervus sika*), ♀, May 18th; ♀, July 16th.
- 3 White-tail deer (*Mazama virginiana*), ♀, June 3d; ♀, June 25th; ♂, June 27th.
- 1 huanaco (*Lama huanacos*), ♂, June 21st.
- 1 llama (*L. glama*), ♂, November 20th.
- 1 Bactrian camel (*Camelus bactrianus*), ♂, March 22d.
- 2 collared peccaries (*Tayassu tajacu*), September 24th.
- 1 black-tailed wallaby (*Macropus ualabatus*), November 5th.
- 1 silver pheasant (*Gennæus nycthemerus*), May 11th.
- 5 Swinhoe's pheasants (*G. swinhoii*), May 21st.
- 9 Amherst's pheasants (*Chrysolophus amherstiae*), 6, May 13th; 2, May 18th; 1 June 4th.
- 1 Wood pigeon (*Columba palumbus*), June 19th.
- 3 gulls, hybrids between *Larus argentatus smithsonianus* and *L. fuscus*, June 2d.

- 3 night herons (*Nycticorax nycticorax naevius*), July 23d.
- 4 mute swans (*Cygnus olor*), May 17th.
- 1 Egyptian goose (*Chenalopex aegyptiaca*), June 28th.
- 6 Canada geese (*Branta canadensis*), 3, May 6th; 3, May 23d.
- 6 black ducks (*Anas obscura*), July 28th.
- 5 summer ducks (*Aix sponsa*), May 9th.
- 7 red-headed ducks (*Fuligula ferina americana*), August 3d.
- 10 water snakes (*Tropidonatus sipedon sipedon*), September 12th.
- 10 garter snakes (*Thamnophis sirtalis sirtalis*), August 12th.
- 5 Marcy's garter snakes (*T. marcianus*), July 28th.
- 7 copperheads (*Ancistrodon contortrix*), September 24th.
- 5 ground rattlesnakes (*Sistrurus miliarius*), September 24th.

It is gratifying to be able to report that there was an increase over the previous year both in the number of species which bred in the Garden and the number exhibited for the first time.

It may be interesting to mention that a California hair seal, which died in December, had been in the collection for fourteen years and six months; this is believed to be the record length of life of this species in captivity. An American bison bull, sold in January, and a zebu cow, which died in the same month were born in the Garden in 1887.

Many of the losses during the year may be attributed to the desire of the average visitor to feed the animals, and while this may be checked to some extent, it is, unfortunately, impossible to prevent it altogether.

The male Siberian tiger, which came from Vladivostok, and the lioness, which has always shared his cage, were kept without artificial heat during the winter and given free access to an outdoor cage. The tiger caught cold at the time of the first hard frost and showed signs of discomfort. He quickly recovered, however, and he and the lioness have remained in perfect health throughout the winter.

Two halfgrown hamadryas baboons from North Africa were also, as an experiment, kept in an outdoor cage, and remained in good health and condition, except that both lost from freezing the last joints of their tails, which, in the adult animal, carry the lion-like tuft.

The experiment of keeping outdoors during the winter animals that have in the past been kept in heated houses will be continued during the next year.

The receipts from admissions were practically the same as last year and would have shown a material increase had it not been for the several weeks of interrupted street car travel early in the season.

The thanks of the Board are extended to all from whom favors have been received.

By order of the Board of Directors

WILLIAMS B. CADWALADER,
Secretary

INCOME AND EXPENDITURES.

For fiscal year ending February 28th, 1911.

INCOME.

Membership dues	\$795 00	
Admission receipts.....	25,105 90	
Rents at Gardens.....	250 00	
Interest	2,209 25	
Sale of animals.....	522 00	
Sale of guides.....	303 60	
Goat and donkey rides.....	1,160 05	
Sundry receipts.....	1,061 30	
Received from the City of Philadelphia through the Commissioners of Fairmount Park.....	30,000 00	
		<hr/> \$61,407 10

EXPENDITURES.

Salaries and wages.....	\$24,605 18	
Office expenses.....	433 81	
General expenses.....	29,161 37	
Purchase of animals.....	5,828 32	
Animals contracted for.....	1,000 00	
		<hr/> \$61,028 68
Balance to credit of profit and loss.....	378 42	
		<hr/> \$61,407 10

C. S. W. PACKARD.

Treasurer

March 14th, 1911, Audited and found correct.

STOCKTON BATES, C. P. A., for
STOCKTON BATES & SON.

MEMORIAL

TO

ARTHUR ERWIN BROWN.

(BORN 1850. DIED 1910.)

EXECUTIVE OFFICER OF THE BOARD FROM 1876.

SECRETARY OF THE SOCIETY FROM 1897.

On the 29th day of October, of this year, the Zoological Society of Philadelphia met with an irreparable loss by the sudden death of its efficient Secretary, Arthur Erwin Brown, Sc. D.

Dr. Brown was born August the 14th, 1850. His zoological work began in the Society early in the spring of 1876, after a liberal education both at home and abroad. Immediately he demonstrated in the management and scientific work of the Institution his great ability. The directors soon commented upon his efficiency and loyalty.

The first two years of his labor were banner years, from a financial standpoint, as they represented the great Centennial exhibition, which centered the attention of the world upon Philadelphia. That same exhibition, however, sowed the seeds of art and science along many paths, which from then on offered attractions to our people, other than in the line of zoological education.

While this city developed more and more into a manufacturing center, New York became the great metropolis of the East, attracting visitors from all over the country. For these reasons the receipts, as shown by our accounts, demonstrated shortly after his work began the difficulty of the task our new superintendent had to contend with.

The Directors were quick to appreciate his wisdom and conscientious discharge of his duties. His cooperation, his enlightened sympathy with educational and scientific zoological work, made such a profound impression upon his co-workers that they elected him to the position of Secretary.

Upon reviewing the lists of additions to our collections we are forced to appreciate how materially he advanced the educational character of the undertaking, thus giving the Society an international reputation.

His courtesy, candor and intelligence soon gave him a leading position among those with whom he associated. He was thus enabled to interest the City Government financially in our great work both that the school children of the city may be educated in natural history, and that we may be enabled to use valuable pathological material for scientific research.

His contributions to science were characterized by accuracy and breadth of view, and added notably to the scientific publications of the Academy of Natural Sciences of Philadelphia and other publications at home and abroad.

His courage, clearness and breadth of intellect won the admiration of those who knew him, while his devotion to his friends and his good-fellowship endeared him to us who were intimately associated with him, and caused us to deeply sympathize with his sister, with whom he made his home.

The character of his scientific work led the University of Pennsylvania to confer upon him the honorary degree of Doctor of Science in 1908.

REPORT OF THE LABORATORY FOR THE YEAR ENDING FEBRUARY 28TH, 1911.

The records of autopsies made in the Laboratory are given in table form below. The zoological classification is followed and shows how many times the various pathological diagnoses were made in each order. The whole number in each class and order is also given. The method of classification adopted in the past has been used. All diagnoses are listed for purpose of record. All conditions noted are not among the causes of death, but are of etiological importance or in the nature of *sequelæ*.

Total animals examined, 325.

Total *mammalia* examined, 93.

Primates. Number examined, 27.

Diseases of the gastro-intestinal tract:

Gastritis, 6; enteritis, 6; colitis, 2; ulcerative enteritis, 1; ulcerative gastritis, 2; ulcerative colitis with perforation, 1.

Diseases of the circulatory system:

Pericarditis, 1; hemorrhage of myocardium, 1; edema of heart muscle, 2; myocarditis, 1.

Diseases of the liver:

Abscess, 2; cloudy swelling, 3; hepatitis, 2; focal necrosis, 1; fatty change, 3; congestion, 1.

Diseases of the genito-urinary system:

Nephritis, 5; Fatty change, 3; cloudy swelling, 2.

Diseases of the respiratory system:

Pleurisy, 1; bronchitis, 2; pneumonia, 2; congestion of lung, 1, atelectasis of lung, 1.

Diseases of the lymphatic system:

Hyperplasia, 2; splenitis, 5; perisplenitis, 1; lymphadenitis, 6.

Miscellaneous:

Infection with streptococcus, 1; parasites in peritoneum, 3; *Tuberculosis, 5; injury, 1; filaria in retro-pharyngeal muscles, 1; intestinal parasites, 2; pachemngitis, 1; inertia uteri, 1; fracture of arm, 1; osteomalacia, 2; secondary anemia, 3; abscess of floor of mouth, 1; peritonitis, 1; healthy, 3; lepto-meningitis, 1; decomposed, 1; general perivascular edema, 1.

* See note on tuberculin reaction.

Lemures. Number examined, 3.

Gastritis, 2; enteritis, 2; ulcerative gastritis, 1; nephritis, 3; septi-
cemia, 1; serositis, 1; naso pharyngitis, 1; cloudy swelling of
liver, 1; lymphadenitis, 1; splenitis, 1; focal necrosis in liver, 1;
intestinal worms, 1.

Carnivora. Number examined, 22.

Diseases of the gastro-intestinal tract:

Gastritis: 1 wolf; 1 meerkat; 1 fox.

Enteritis: 3 wild cats; 2 foxes; 1 skunk; 1 leopard; 1 raccoon;
1 dingo; 1 jackal; 1 wolf; 1 meerkat; 1 ocelot.

Colitis: 1 wild cat; 1 ocelot.

Parasitic duodenitis: 1 raccoon.

Ulcerative gastritis: 1 raccoon.

Constipation: 1 raccoon.

Diseases of the circulatory system:

Atheroma of aorta: 1 fox; 1 leopard; 1 jackal.

Brown atrophy of heart: 1 leopard.

Rupture of aortic aneurysm due to verminous aortitis: 1 para-
doxure.

Granular degeneration of myocardium: 1 raccoon.

Pericarditis: 1 meerkat.

Endoaortitis: 1 ocelot.

Diseases of the liver:

Fatty change: 1 skunk; 1 raccoon.

Abscess: 1 skunk.

Congestion: 1 leopard; 1 jackal.

Bile pigmentation: 1 raccoon.

Hepatitis: 1 dingo.

Cloudy swelling: 1 meerkat.

Diseases of the genito-urinary system:

Nephritis: 2 wild cats; 1 fox; 1 skunk; 1 leopard; 1 raccoon;
1 dingo; 1 meerkat.

Acute cystitis and urethritis: 1 fox.

Acute prostatitis: 1 fox.

Congestion of the kidney: 1 jackal.

Acute vaginitis and metritis: 1 meerkat.

Fatty change in kidney: 1 ocelot.

Diseases of the respiratory system:

Pneumonia: 1 skunk.

Bronchitis: 1 wild cat.

Atelectasis of lung: 1 wild cat.

Parasitic cysts in lung: 1 wild cat.

Diseases of the lymphatic system:

Lymphadenitis: 3 wild cats; 1 skunk; 1 leopard; 2 raccoons;
1 meerkat; 1 ocelot.

Hyperplasia: 1 wild cat; 1 fox.
 Splenitis: 1 skunk; 2 raccoons; 1 jackal; 1 meerkat.
 Hematoma of lymphnode: 1 dingo.
 Amyloid of spleen: 1 ocelot.

Miscellaneous:

Poliomyelitis: 1 raccoon.
 Tuberculosis: 1 coati.
 Tuberculous arthritis: 1 coati.
 Peritonitis: 1 bear; 1 fox; 1 raccoon.
 Injury: 1 bear.
 Larvæ of flies in serous membranes: 1 paradoxure.
 Osteomalacia: 1 raccoon.
 Rachitis: 1 raccoon.
 Secondary anemia: 1 raccoon.
 Septicemia: 1 meerkat.
 Decomposed: 1 raccoon; 1 marten.
 Parasites in stomach: 1 wild cat.
 Parasites in intestines: 3 wild cats; 1 leopard; 1 bear.
 Parasites in thigh: 1 wild cat.
 Shock: 1 jackal.

Rodentia. Number examined, 9.

Prolapsus of intestine: 1 dormouse.
 Dilatation of heart: 1 capybara; 1 porcupine.
 Myocarditis: 1 capybara; 1 porcupine.
 Cirrhosis of the liver: 1 capybara.
 Fatty change in liver: 1 porcupine; 1 jerboa.
 Edema of lungs: 1 capybara.
 Tuberculosis of lungs: 1 capybara.
 General congestion: 1 capybara.
 Sarcoma: 1 mouse.
 Decomposed: 1 porcupine.
 Injury: 1 gopher; 1 squirrel.

Ungulata. Number examined, 19.

Diseases of the gastro-intestinal tract:
 Gastritis: 2 deer; 1 zebra; 1 tapir.
 Enteritis: 2 zebra; 1 deer; 1 bison; 1 tapir.
 Valvulus: 1 zebra.
 Sand in cecum: 1 zebra.
 Hemorrhages in stomach: 1 antelope.
 Hemorrhagic pancreatitis: 1 antelope.
 Diseases of the circulatory system:
 Pericarditis: 1 deer.
 Atheroma of aorta: 1 zebra.

Diseases of the genito-urinary system:

- Nephritis: 2 deer; 1 elk; 1 zebu.
- Congestion of kidney: 1 antelope.
- Cloudy swelling of kidney: 1 bison.

Diseases of the respiratory system:

- Pneumonia with abscesses: 1 tapir.
- Mucoid metastasis in lung: 1 zebra.
- Parasites in lung: 1 deer.
- Bronchitis: 1 antelope.
- Pleuritis: 1 deer.
- Pleural adhesions: 1 deer; 1 elk; 1 bison.
- Congestion of lung: 1 elk.
- Edema of lung: 1 elk.
- Hemorrhages in lung: 1 antelope.

Diseases of the lymphatic system:

- Splenitis: 2 deer; 1 tapir.
- Septic lymphadenitis: 1 tapir.

Miscellaneous:

- Fibro myoma: 1 zebra.
- Tuberculosis: 1 antelope; 2 deer; 1 zebra; 2 bison.
- Peritonitis: 1 deer.
- Injury: 3 deer; 1 elk; 1 antelope.
- Healthy: 1 bison.
- Abscess in floor of mouth: 2 tapirs.
- Pyemia: 1 tapir.
- Decomposed: 1 deer.
- Parasites in stomach: 1 zebra.
- Parasites in intestine: 2 zebras.

Edentata. Number examined, 2.

- Prolapsus of intestine: 1 armadillo.
- Ulcerative colitis: 1 armadillo.
- Endometritis with fibroma in uterus: 1 armadillo.
- Septicemia: 1 armadillo.
- Cloudy swelling of liver and kidney: 1 armadillo.
- Myocarditis: 1 armadillo.
- Splenitis: 1 armadillo.
- Hemorrhagic infarct in spleen: 1 armadillo.

Marsupialia. Number examined, 8.

Diseases of the gastro-intestinal tract:

- Gastritis: 1 opossum.
- Enteritis: 1 kangaroo; 2 opossums.
- Abscess in stomach: 1 opossum.
- Naso-pharyngitis, laryngitis, trachitis: 1 kangaroo.

Diseases of the circulatory system:

- Pericarditis: 1 wallaby; 1 opossum.
- Vegetative endocarditis: 2 opossums.
- Myocarditis: 1 opossum.
- Degeneration of myocardium: 1 wallaby.

Diseases of the liver:

- Subcapsular hemorrhage: 1 kangaroo.
- Fatty change: 1 kangaroo.
- Congestion: 1 wallaby; 2 opossums.
- Hepatitis: 1 opossum.

Diseases of the genito-urinary system:

- Nephritis: 3 opossums; 1 kangaroo.
- Congestion: 1 opossum.
- Hemorrhagic infarct: 1 opossum.

Diseases of the respiratory system:

- Pneumonia: 2 opossums; 1 wallaby.
- Bronchitis: 2 kangaroos.
- Peribronchial abscesses: 1 kangaroo.
- Congestion of the lungs: 2 opossums.
- Parasitic cysts in lung: 2 opossums.

Diseases of the lymphatic system:

- Lymphadenitis: 1 opossum; 1 wallaby.
- Hyperplasia: 2 kangaroos.
- Abscess in spleen: 1 wallaby.
- Splenitis: 1 wallaby; 2 opossums.

Miscellaneous:

- Necrosis and ulceration of upper jaw: 3 kangaroo.
- Septicemia: 1 wallaby; 1 opossum.
- Necrosis of soft parts of feet: 1 wallaby.
- Cellulitis of soft part of both legs with abscesses in thigh: 1 wallaby.
- Tenosynovitis: 1 wallaby.
- Parasites in stomach: 3 opossums.
- Parasites in intestines: 2 opossums.

Pinnipedia. Number examined, 3.

- Gastritis: 1 seal.
- Enteritis: 1 seal.
- Congestion and edema of intestinal mucosa: 1 seal.
- Congestion of liver: 1 seal.
- Hemorrhagic infarct in kidney: 1 seal.
- Cyst in kidney: 1 seal.
- Congestion of lungs: 2 seals.
- Lymphatic hyperplasia: 2 seals.
- Chyle obstruction: 1 seal.

Total aves examined, 225.

Passeres. Number examined, 116.

Diseases of the gastro-intestinal tract:

Gastritis, 2; enteritis, 28; impaction, 2; obstruction of cloaca, 1; pancreatitis, 1.

Diseases of the circulatory system:

Myocarditis, 1; degeneration of myocardium, 1; aneurysm of aorta with rupture, 1; pericarditis, 1.

Diseases of the liver:

Hepatitis, 13; fatty change, 10; hemosiderosis, 2; cloudy swelling, 1; focal necrosis, 2; cirrhosis, 1; amyloid, 1.

Diseases of the genito-urinary system:

Cloudy swelling of kidney, 6; nephritis, 7; fatty change, 4; amyloid of kidney, 1.

Diseases of the respiratory system:

Pneumonia, 8; pleuritis, 1; congestion of lungs, 6; anthracosis, 1; hemorrhage into lung, 2; encysted cestode in lung, 1; bronchitis, 2.

Diseases of the lymphatic system:

Hyperplasia, 4; splenitis, 13; coagulation necrosis, 1; focal necrosis, 1; amyloid, 1.

Miscellaneous:

Acute infection, 4; acute general serositis, 1; injury, 5; undetermined, 12; peritonitis, 1; mould infection, 1; tuberculosis, 1; general congestion, 1; extensive fatty infiltration, 2; death caused by swallowing pieces of rusted tin, 9; not posted, 2; decomposed, 41; parasites in intestine, 13; parasites in blood, 4.

Picariæ. Number examined, 4.

Gastritis, 1; enteritis, 3; fatty change in liver, 1; abscesses in liver, 1; lymphatic hyperplasia of duodenum, 1; pericarditis, 1; auricular aneurysm, 1; peritonitis, 1; edema of lungs, 1; splenitis, 1; serositis, 1; parasitis in intestine, 1.

Psittaci. Number examined, 41.

Diseases of the gastro-intestinal tract:

Enteritis, 10; impaction of cloaca, 1; rupture of gizzard, 2.

Diseases of the liver:

Hepatitis, 2; fatty change, 1; congestion, 2.

Diseases of the kidney:

Cloudy swelling, 1; congestion, 1.

Diseases of the respiratory system.

Bronchitis, 1; pneumonia, 2; fibrinous pneumonia, 2; congestion of lungs, 2; edema of lungs, 2; hemorrhage of lungs, 1; pleuritis, 2.

Diseases of the lymphatic system:

Splenitis, 6; abscesses of spleen, 1.

Miscellaneous:

Tuberculosis, 5; osteomalacia, 1; general congestion, 3; peritonitis, 2; undetermined, 6; decomposed, 3; mould infection, 1; alveolar sarcoma, 1; parasites in blood, 1.

Striges. Number examined, 15.

Diseases of the gastro-intestinal tract:

Gastritis, 1; enteritis, 7.

Diseases of the liver:

Pigmentation of liver, 3; hepatitis, 1; congestion, 2; necrosis, 1.

Diseases of the kidney:

Cloudy swelling, 2.

Diseases of the respiratory system:

Pneumonia, 1; congestion of lungs, 3; hemorrhage of lungs, 1; anthracosis, 1.

Diseases of the lymphatic system:

Splenitis, 2; hyperplasia, 1; necrosis, 1.

Miscellaneous:

Undetermined, 2; not posted, 1; decomposed, 3; injury, 1; necrosis of pancreas, 1; parasites in blood, 4.

Accipitres. Number examined, 10.

Diseases of the gastro-intestinal tract:

Enteritis, 4.

Diseases of the liver:

Hepatitis, 2; pigmentation, 2; fatty change 1; necrosis, 1.

Diseases of the kidney:

Necrosis, 2; nephritis, 1.

Diseases of the respiratory system:

Congestion and edema of lungs, 2; pneumonia, 1; bronchitis, 1.

Diseases of the spleen:

Splenitis, 4.

Miscellaneous:

Injury, 1; acute infection, 1; decomposed, 3; mould infection, 1; broken egg, 1; myositis, 1; tuberculosis, 1; drowning, 1.

Columbæ. Number examined, 6.

Enteritis, 3; periarthrititis, 1; osteomalacia, 1; congestion and edema of lung, 1; hepatitis, 1; nephritis, 1; tuberculosis, 2; not posted, 1.

Galli. Number examined, 10.

Gastritis, 1; enteritis, 6; impaction of cloaca, 1; hepatitis, 1; cloudy swelling of liver, 2; cloudy swelling of kidney, 1; nephritis, 1; pleuritis, 1; splenitis, 1; hyperplasia of spleen, 1; peritonitis, 1; mould infection, 1; tuberculosis, 1; injury, 1; decomposed, 1.

Fulicariæ. Number examined, 2.

Tuberculosis, 1; enteritis, 1; hepatitis, 1; splenitis, 1; pneumonia, 1; granular degeneration of myocardium, 1.

Alectorides. Number examined, 1.

Enteritis, 1; hyperplasia of spleen, 1; congestion of kidney, 1; parasites in intestine, 1.

Steganopodes. Number examined, 2.

Pericarditis, 2; congestion of lungs, 1; nephritis, 1; perihepatitis, 1; hemorrhage and edema of lungs, 1; fatty change in liver; splenitis, 1; enteritis, 1.

Ilerodiones. Number examined, 4.

Enteritis, 2; pneumonia, 1; fatty change in liver, 1; fatty change in kidney, 1; undetermined, 1; decomposed 1; bile obstruction, 1.

Anseres. Number examined, 9.

Gastritis, 1; enteritis, 3; injury, 4; tuberculosis, 1; cystic pancreatitis, 1; parasites in intestine, 1; hepatitis, 1; hematomata of liver, 1; abscess of kidney, 1; coagulation necrosis of spleen, 1; decomposed, 1.

Struthiones. Number examined, 4.

Gastritis, 1; acute exfoliative gastritis, 1; suppurative proventriculitis, 1; enteritis, 1; congestion of lungs, 1; aortitis, 1; hemosiderosis of liver, spleen and kidney, 1; nephritis, 1; fowl diphtheria, 2; infection with *Bact columbarum*, 2; injury, 1.

Limicolæ. Number examined, 1.

Fatty change in liver, 1; splenitis, 1; nephritis, 1.

Total *Reptilia* examined, 7.

Squamata. Number examined, 5.

Gastritis, 2; enteritis, 2; fatty change in liver, 1; pneumonia, 1; tuberculosis, 1; sore mouth, 3; parasites in lung, 1; decomposition, 3.

Crocodylini. Number examined, 2.

Gastritis, 2; enteritis, 2; splenitis, 1; lymphadenitis, 1; cold abscesses in skin, 2; parasites in pleura and lung, 1.

TUBERCULIN REACTION IN MONKEYS.

During the past year 21 new monkeys have been tested by this means. At the beginning of the year there were two monkeys held in the detention room for re-testing. Because of cases of tuberculosis in the Monkey House 16 animals have been returned. This makes a total of 39 Tuberculosis tests from March 1st, 1910, to March 1st, 1911. Besides those tested there remain no new monkeys, but 5 held-over specimens in the detention room on March 1st. These 5 animals have been kept in the laboratory building for various lengths of time and will be injected very shortly.

Of the 21 new monkeys this year 3 have died in the Exhibition Cages but none in the Laboratory. Two of these three were free from tuberculosis, while the other, Green Monkey No. 80, showed advanced tuberculosis lesions. This animal lived but a short time in the Monkey House (see list below). Its temperature records following the injection of 1.2 mg. tuberculin were unexceptionable. There were four other deaths from tuberculosis during the twelve months covered by this report. The Chimpanzee, "Billy," in a separate cage during his entire life in the Garden, died of tuberculosis after two and a half years on exhibition. This animal was not tested upon arrival because a separate isolated cage had been prepared for him. Moreover he was a young animal in excellent condition when he came. With him was put on October 5th, 1908, for one day only, Reddish Macaque No. 1. He treated this monkey so badly that it was removed to a cage containing 4 baboons, 2 common macaques and a black ape. The macaque died of Tuberculosis October 5th, 1910. The monkeys in this cage were removed to the Laboratory immediately, and retested after three weeks. All but the Black Ape No. 11 passed with good charts. This animal is still held.

For two weeks before the death of the Chimpanzee he had as companion in his cage Common Macaque No. 215. Ten days after the death of the Chimpanzee this monkey was killed and found free from tuberculosis.

Sooty Mangabey No. 65, a cagemate of Green Monkey No. 80, died of tuberculosis February 4th, 1911. He was originally sent to the Monkey House December 15th, 1907, where he remained until the Green Monkey No. 80 died April 4th, 1910. He was then returned and injected on April 25th, and again June 24th, 1910, when he was passed. On the first occasion his temperature reaction following the tuberculin was indicative of a non-tuberculosis monkey. On the last test while the course as a whole was quite high, there was certainly nothing to point toward a tuberculous condition. He died February 4th, 1911.

The last monkey to die of tuberculosis was Rhesus Macaque No. 115, on February 16th, 1911. This animal was first injected October 10th, 1905, and again January 27th, 1906, being passed to Monkey House after second test. He was observed in poor condition in the early part of January, 1911, and returned to the detention room in the Laboratory. After having received a tuberculin injection on February 14th, his temperature curve failed to follow the usual course, but after an effort to rise rapidly fell to subnormal and he died February 16th.

Five other monkeys died in the Monkey House, and 5 were killed in the Laboratory because of their connection with the above infected animals. None were tuberculous.

In following the course of infection of the 5 tuberculous monkeys, we find that there is nothing to explain the last one, Rhesus Macaque No. 115, or the Chimpanzee, unless we assume that Reddish Macaque No. 1 was tuberculous when put with this Anthropoid. It seems much more probable that the Chimpanzee infected the Macaque, as this latter had just given a very excellent chart. As mentioned above, the seven monkeys in the same cage where the Macaque died have as yet not developed tuberculosis.

The 2 Common Macaques were killed and found healthy.

The black Ape No. 11 is still held because of irregular temperature.

There has never been a tuberculous animal in association with Rhesus Macaque No. 115 as far as is known.

Green Monkey No. 80 died after five weeks on exhibition.

The only explanation for this infection lies in Red Monkey No. 21. (See below.) Sooty Mangabey No. 65 was also associated with Red Monkey No. 21.

Red Monkey No. 21 came in May, 1909, with a lot of monkeys purchased for experimentation and soon discovered to be badly infected (see 1910 report). It was injected May 24th, 1909, July 22nd, 1909, and November 11th, 1909, and while it gave good temperature charts after all tests, it was held because others in the same lot had died of tuberculosis, or were suspected of having it. (Anubis No. 38, Malbrouck Monkey No. 2, see 1910 Report.) However, after death of all suspicious monkeys of this lot and having been in quarantine seven months, he was passed January 3d, 1910. He was put into the cage which afterwards received Green Monkey No. 80, following the death of which he was returned to the Laboratory, and tested April 25th, 1910, and June 24th, 1910, giving good reactions on both occasions. Being returned to the Monkey House he was put into the cage containing Sooty Mangabey No. 65 and other monkeys as shown on the chart under the last-named animal.

One cannot help feeling that this monkey has carried the infection, possibly ever since May, 1909, without himself giving evidence of the disease.

A healthy monkey may carry on his hair tubercular material if his cagemates before he is received at the Gardens were tuberculous. And though he may pass the tuberculin test on admission he may later contract tuberculosis from the material carried on his own body. Therefore, all monkeys as soon as received are now washed with soap and water and rinsed in carbolic acid solution.

We do not feel that this experience militates in any way against the value of the tuberculin test in monkeys. The only entirely inexplicable case concerns the Rhesus Macaque No. 115, the others having at least a balance of circumstantial evidence in favor of the outlined course of infection.

Monkeys dying of Tuberculosis March 1st, 1910, to March 1st, 1911.

1876. Green Monkey 80. Injected, 3/4/10; Passed to Monkey House, 3/8/10; Died, 4/13/10:—

Associated with Hamadryas Baboon 24: Passed; Died; no TB. Red Monkey 17: Killed; no TB. Green Monkey 78: Passed. White Throated Monkey 10: Passed; Died; no TB. Weeper Cebus 52: Killed; no TB. Sooty Mangabey 68: Passed. Sooty Mangabey 65: (see below). Mongoose Lemur 19: Passed. *Red Monkey 21: Passed. Ringtailed Lemur 11: Passed.

2032. Reddish Macaque 1. Injected 9/28/08; Passed to Monkey House, 10/4/08; Died, 10/5/10:—

Associated with Long-Armed Baboon 2: Passed. Yellow Baboon 49: Passed. Yellow Baboon 48: Passed. Yellow Baboon 46: Passed. Common Macaque 211: Held; Injected; Killed; no TB. Common Macaque 212: Held; Injected; Killed; no TB. *Black Ape 11: Injected twice; still held.

2142. Sooty Mangabey 65. Injected 12/9/07; Passed, 12/15/07:—

Returned after death of Green Monkey 80: Injected, 4/25/10; Passed, 4/30/10; Held; Injected, 6/24/10; Passed, 6/28/10, to Monkey House; Died, 2/4/11.

Associated with *Red Monkey 21, *Blythe's Monkey 1, *Sooty Mangabey 69, *Sooty Mangabey 80, *Sooty Mangabey 71, *White Throated Monkey 11, *White Collared Mangabey 13, *Stair's Monkey 1.

2159. Rhesus Macaque 115. Injected 10/10/05 and 1/27/06; Passed to Monkey House, 2/3/06; Injected, 2/14/11; Died, 2/16/11:—

Associated with *Rhesus Macaque 132. *Rhesus Macaque 134: Young. *Rhesus Macaque 130: "Mike." *Rhesus Macaque 133: Young; died, 2/22/11. *Common Macaque 214.

(Red Monkey 21: Injected, 5/24/09; Held; Injected, 7/22/09; Passed, 7/26/09, on temp.; Held; Injected, 11/11/09;

* Now in Laboratory for retesting, March 1st, 1911.

Passed on temp., 11/15/09; Held because in same room with Anubis Baboon 38 and Malbrouch Monkey 2 (see 1910 Report); Injected, 12/29/09; Passed, 1/3/10; Returned, 4/13/10, after death of Green Monkey 80; Injected, 4/25/10; Held; Injected, 6/24/10; Passed, 6/28/10; Returned, 2/5/11, after death of Sooty Mangabey 65.)

2124. Associated with Chimpanzee:—

Reddish Macaque No. 1: For one day after 10/4/08; TB. Common Macaque 215: For two weeks before death; Injected, 12/29/09 and 3/4/10 and 4/25/10; Passed, 4/30/10; Killed, 1/17/11; no TB.

The Bananas supplied to the Monkeys are brought direct from the wharf and during transit are doubtless handled by persons suffering with tuberculosis. It has been suggested that they might present a means by which tuberculosis was contracted by Monkeys. In order to determine whether an organism having the morphology and tinctorial properties of the tubercle bacilli could be found upon the skin of these bananas, eight large ones were cut from the stems and washed in sterile freshly distilled water. This washwater was centrifuged with a small quantity of alcohol, the sediment collected and dried on slides. It was stained with carbol-fuchsin and decolorized by a saturated solution of methylene blue in absolute alcohol. A search of two and one half hours over these slides failed to reveal any alcohol fast organisms.

PARASITES.

There have been many animal parasites found in our post mortems this year, a few of which will prove of unusual interest. Dr. F. D. Weidman, who started with us early in January, 1911, is paying particular attention to them, and will proceed with a special investigation of the long filarial worms found among the muscles and beneath the skin of wild cats. In one of these animals he has already found larvæ in the blood, seemingly young forms of the muscle *filaria*. Dr. Allen J. Smith still receives the worms from the autopsies, and has reported some of them. Routine blood examinations of all animals from which fluid blood could be

obtained has not brought to light as many blood parasites as other investigations would lead us to believe were present.

Eleven parrots have come to autopsy bearing proventricular *spiroptera*. This is an increase of two over 1910. The birds of this list were caged on the north and west sides of the parrot room in the Bird House, excepting the two Pennants Parakeets, which were on the south wall. No particular cages or groups of cages seem to be affected with extraordinary severity.

The following are lists of determined parasites, blood parasites, and parrots affected with proventricular worms:

General Parasites;

1853. Chapman's Zebra:

Ascaris Equorum in Stomach and Intestines.

1873. Lesser White Nosed Monkey:

Filaria Gracilis in retroperitoneum.

1876. Green Monkey:

Filaria Gracilis in retroperitoneum.

1895. Weeper Cebus:

Filaria Gracilis in retroperitoneum.

2051. Talopian Monkey:

Filaria Gracilis in retroperitoneum.

2088. Zebra:

Ascaris Equorum in intestines.

2175. Common Deer:

Tenia Echniococcus in lung.

Blood Parasites;

1905. European Magpie:

Filaria Larvæ.

2017. White Throated Jay Thrush:

Filaria Larvæ.

2018. White Throated Jay Thrush:

Filaria Larvæ.

2036. Common Crow:

Halteridium.

2039. Screech Owl;

Halteridium.

2103. Scaly Breasted Lorikeet:

Hemoproteus.

2138. Screech Owl:

Hemoproteus.

2156. Screech Owl:

Hemoproteus.

PROVENTRICULAR WORMS.

	Admitted.	Died.
1868. Rose Hill Parakeet.....	11/27/09	4/ 3/10
1890. White Fronted Amazon.....	3/28/10	4/29/10
1912. Crested Ground Parakeet.....	11/30/07	5/22/10
1932. Blossom Headed Parakeet.....	4/22/10	6/14/10
1941. Crested Ground Parakeet.....	7/25/09	6/28/10
2000. Pennants Parakeet.....	2/ 5/10	9/ 2/10
2004. Pennants Parakeet.....	6/ 6/10	9/10/10
2082. Golden Headed Conure.....	8/13/10	11/12/10
2086. Yellow Throated Parakeet....	10/ 2/07	12/ 2/10
2104. Scaly Breasted Lorikeet.....	9/13/10	12/19/10
2172. Blue and Yellow Macaw.....	12/ 9/10	2/24/11

SPECIAL REPORTS.

Four tumors have been found during the year, of which the following are brief notes:—

1853. Chapman's Zebra.

Fibroma Peritonei, with sarcomatous and osseous change. Quoting from our post mortem notes, "Within the U of the cecum is a mass about the size of a full term fetal head, attached to the serosa. It is yellow nodular, crackles on pressure, and is of varying consistency. On section it is found full of bone salts, particularly in the trabeculæ. The masses enclosed by these are yellow and fatty, or pale yellow white; seem like connective tissue."

Microscopically, largest part of the tumor is fibroma; however the sections show a few areas in which there exists active proliferation of young connective tissue cells, and a few giant cells. In close association with these areas a mucoid degeneration might be found. There is also bone formation with mucoid substance between the septa.

1960. Red Shouldered Parrakeet. Alveolar Round Cell Sarcoma.

The intestines are pushed forward and the liver and stomach upward by a mass of left testicle. It is 3x2.5 centimetres, white and gray, encapsulated, smooth and the center is softened. It occupies the whole space in front of

the upper lobe of the left kidney. The section shows an alveolar sarcoma. Some of the cells, particularly in the freely growing areas, are of the epithelioid type. In some places the tumor cells seem to have escaped from the alveoli and grown unrestrictedly in large distended perivascular spaces. There are certain groupings which suggest that the tumor arose from the adrenal. The testis on that side is missing. Dissection was not made because the tumor was left in place and the whole bird kept for a museum specimen.

1961 1/2. *White Footed Mouse*; Spindle Cell Sarcoma.

This tumor apparently arose from the soft tissue of the upper hind leg on the right side. It presents a tumor about 2.5x2.5 centimetres of yellow white homogeneous appearance. The capsule is delicate but distinct. Microscopically it is an ordinary spindle cell sarcoma. Several areas have undergone a necrotic change. Two irregular multinucleated cells were encountered.

1993. *Six Banded Armadillo*. Fibroma Uteri. Acute Exudative Endometritis.

The uterus is enlarged so that it measures 90 millimetres from the external os to the fundus. The tubes and ovaries are apparently normal. There is considerable grumous blood around and outside the cervix. The cervix is pale and opaque in its lower half, while the upper half is slightly congested and the mucosa decidedly rugous. The uterus itself shows an attenuated muscular wall with a thickened irregular mucosa, which is the seat of pseudo-membraneous tabs of a dull red color. It is also mottled with yellow in some places. Grumous blood is present in this cavity. The size of the uterus is due to a large fibroma attached to the left lateral wall near the cornu. The mucous membrane covering this mass is irregularly disturbed, the tumor being bare in some places. Here and there the mucosa shows the same degenerating and hypertrophic character as seen on the uterine wall. The tumor is attached to the wall by a narrow peduncle.

The following cases seem worthy of special mention:—

1907. *Nine Banded Armadillo*. Rupture of ulcer in colon and hernia of intestines.

The following unique pathological finding was encountered in the above animal, supposedly dying from prolapsus recti. The only clinical observations were hemorrhage from the intestines. "There is a large amount of intestine protruding from the anus, which is covered with clotted blood. It measures 4 feet 4 inches. The length of the whole intestine from the pylorus to the anus is 16½ ft. The protruding portion is not gangrenous, and the animal probably bled to death. There is no indication of obstruction or inflammation, except as appeared later. The animal seems not to have been constipated." "There is a rupture of the anterior surface on the rectal wall about 8 centimetres from the opening, and the intestines are passing out of this perforation. No constriction at this point. The edges of the rupture are smooth and only at this point is there any indication of existing disease. This point shows a narrow zone of diffuse congestion with a slight thickening of the mucosa as if there had been an ulceration. In the neighborhood of the ulcer, there are small elevations of the mucosa ranging from 1 to 3 millimetres, the larger ones of which show a pale gray center against the light yellow of the surrounding mucosa. This appeared to be small mucous cysts. The mucous membrane is soft, smooth, pale yellow and opaque."

1948. *Common Raccoon*, Poliomyelitis.

This animal was observed in the Laboratory to have complete paralysis of the anterior and partial paralysis of the posterior extremities. This latter was almost complete in muscles controlling the feet, while the thigh and hip muscles showed some irregular incoordinate movements. Respiration shallow

but regular. History shows that the power of the extremities began to fail about a month before death, and was absolutely lost in the fore extremities three days before the animal was killed.

Notes and statement by Dr. J. H. W. Rhein on the central nervous system.

"Examination of the central nervous system shows the presence of marked round cell infiltration of pia of cortex and of spinal cord, more particularly in the lower thoracic and lumbar regions. Ganglion cells in the lumbar region are markedly diseased. There are numerous old and fresh hemorrhages and a moderate degree of round cell infiltration in the anterior horns."

Two young of this animal, born three months before its death, showed weakness and gradual increasing paralysis of their extremities beginning when three months old (that is at the time of the death of their mother), and lasting until their death, one in the seventh month and the other in the eighth month of life. These were found not to have changes in the central nervous system, but there was sufficient rachitis to account for this paralysis. This is the only animal we have had this year in whose history or central nervous system any evidence of poliomyelitis existed.

The two cases here reported are instances of aneurysms within the pericardial sac, one of which ruptured. The blood vessels did not show any other changes:

1996. *Great Barbet*, Auricular Aneurysm.

There is a large mass behind the heart pushing it forward. This is covered with a shiny gray capsule. On opening this it was found to be filled with organized coagulum with a cavity at the end attached to the heart. This mass is 1.5x1.5 centimetres and seems to originate from the auricle posteriorly. The aorta and vein can be traced behind it.

2001. *Common Mynah*. Aneurysm of the Aorta with Rupture.

The anterior and lateral air sacs are filled with clotted blood and the pericardial sac is distended with the same. On dissection a thin walled aneurysmal sac is found on the first part of the aorta and the blood vessels come off from this sac. There is a dislocation of the heart downward and to the left. The aneurysmal sac is chiefly posteriorly and to the left. A small rupture is found on the postero-lateral surface just above the origin of the left innominate artery.

2020. *White Whiskered Paradoxure*; Verminous Aortitis, Aneurysm and Rupture.

The following case is one of unusual interest and rarity. The description is as exact as possible, but the specimens should be seen to be properly appreciated. The worms are now being studied by Dr. Allen J. Smith.

In the two pleural cavities there is 100 C. C. bloody fluid. On front of the esophagus is a large currant jelly clot. There is a large mass in the mid portion of the thoracic aorta. Beginning with the first part of the aorta, the wall is irregularly thickened, dull brown and pink, and there are many petechial hemorrhages and punctuate ulcerations; these are soft and covered with a blood stained filmy exudate. There is a dissecting aneurysm in the mid part of the thoracic aorta about 6 centimetres long. This has ruptured on its posterior inferior side. The clot has been tunneled through so that a perfect passage for the aortic blood is maintained. Between the dissected portion of the media and intima and the outer wall various grades of ulceration have occurred, particularly on the outer wall. In these ulcerations as well as those mentioned above in the first part of the aorta, blood stained nematodes are firmly imbedded, with about 2 m. m. of their lengths free in the blood stained exudate described above as covering the ulcerations. The swellings and ulcerations are present as quoted above as far as the renal arteries. Below this the aorta is swollen, yellow brown and opaque.

2085-2115. *Two Common Opossums. Acute Vegetative Endocarditis.*

We wish to put on record the two following cases of acute valvular endocarditis. We have paid considerable attention to this condition and these two bring our total of endocarditides up to six.

2085. Both lungs are distended with air, irregularly mottled purple and red, crepitate very slightly but float. Bloody fluid exudes on section. Scattered throughout the lung, particularly around bronchioles and blood vessels, are small areas of pale purple color slightly firmer than surrounding lung. Whole lung exudes bloody fluid on pressure. In both lungs particularly on costal surface and near the hilus are small hard nodules which seem like cysts containing a dark fluid. On section these are found to contain small filarial worms containing many eggs.

The mitral valve of the heart is the seat of friable light yellow vegetative growth which nearly occludes the aperture. Its right posterior portion extends across to the posterior leaflets of the aortic valve. Subjacent muscle is pale and there seems to be an extension from the affected valve beneath both the mitral and the aortic valves. The chambers do not seem dilated, even the left auricle.

Liver shows nutmeg appearance. Spleen is much enlarged, having a smooth tense capsule. Section surface springs out on incision and presents a mottled purple surface with large diffuse follicles. The kidney is dull and opaque with irregular obscure striæ which are separated by congested lines. The glomeruli are visible in some places but not in others. The pyramid is congested. The urine is dark brown and contains large quantities of albumin, many coarse granular and cell casts, red blood cells, leucocytes and free kidney epithelium.

The mucosa of the stomach is irregularly swollen, opaque, dull yellow and gray, and covered with a small amount of slimy white mucus. Attached to the mucosa especially on the greater curvature are many nematodes. Beginning at the pylorus and extending throughout the duodenum and jejunum the mucosa is swollen, opaque, mottled pale pink and gray, and covered with a little yellow mucus. The serous coat shows many small petechia and many small pale hemorrhagic extravasations. The ileum is much less affected, the mucosa being more transparent. Lymph elements not enlarged. Lymph glands of the neck mediastinum and bronchi are slightly enlarged, homogeneous, dull red. Those of the mesentery are slightly enlarged, pale red and yellow, but soft and not separated into cortex and medulla.

2115. Except for a very small passage the mitral orifice is closed with yellow coagulum firmly attached to its auricular surface. The ventricular surface is slightly roughened and a small tab of coagulum is found between the aortic leaflet and aortic orifice. There is no evidence of dilatation or hypertrophy except in the left auricle. On the surface but not in the substance of the liver are several reddish white areas about 1 cm. across extending slightly into the liver substance. The spleen is slightly enlarged and has a mottled purple section surface. The kidneys show subacute diffuse nephritis with a hemorrhagic infarct in the left kidney.

The stomach presents a slightly injected serosa with a swollen injected opaque mucosa and contains dark mucus and nematodes. The mucosa of the whole intestine is swollen, opaque, irregular and covered with a slimy yellow gray mucus with green streaks. There are several elevations of the mucosa with a dark depressed spot in the center. Lymphatics seem normal.

Dr. W. B. Cadwalader has examined the central nervous system of the following animals and found them negative of pathologic change: 2 American Wild Cats, Indian Ante-

lope, Kangaroo, California Hair Seal, Black Ape, Mustache Monkey, Black Spider Monkey, Red Monkey and Chimpanzee.

As a Special Report we wish to add the following notes on

BIRD DIPHTHERIA.

During the year upon which this report is made, we have had two autopsies upon Cassowaries with Bird Diphtheria due to *Bacillis columbarum* and one case has been observed during life and apparently cured. We wish to put these cases on record not because of anything unusual of bacteriological or pathological interest, but because the last case mentioned was treated with human diphtheria antitoxin and recovered. The fatal cases showed large pseudo-membraneous collections on the mucous membrane of the naso-pharynx and beneath the tongue. The nares were occluded with similar material. The œsophagus and proventricle were diffusely reddened, and the mucosæ had several small plaques of the exudate. Before death there was much discharge from the bill and a collection of dried exudate on the skin of the neck as far down as the wattles.

In the bird which passed through the attack a similar condition existed; there were, however, no pseudo-membranes upon the mucosæ as far as could be detected. This mucosa was reddened, slimy and slightly swollen. Here and there small yellow or yellow pink nodular elevations were seen under the surface of the mucosa membrane covering the superior maxilla. Upon the skin of the neck a heavy crust formed from the discharge leaking out of the corners of the mouth. Long strings of mucus were seen when the bird opened its beak. At the suggestion of Mr. Carson the bird was given diphtheria antitoxin as follows:—

December 3d, 3000 units;
 December 8th, 1500 units;
 December 17th, 5000 units;
 December 21st, 5000 units.

Shortly after the beginning of this treatment the bird was more lively and ate better than it had for some time previous.

The discharge then decreased and the mucous strings were less. This improvement has proceeded slowly and steadily, and at the end of the year there is practically no excess of mucus seen, when the bird opens its beak, and no crusts have formed upon the skin of the neck. We consider the bird practically well.

NOTES UPON SPECIMENS OF THE FEMALE GENITO-URINARY ORGANS.

By Dr. E. A. Schumann.

There have been no distinctive lesions of the female genitalia since the last report.

[Note upon the structure of the Cotyledonal processes in the gravid uterus of the woolless sheep]:—

The animal was about four months pregnant of a single foetus maturing in the right uterine cornua. There were scattered irregularly about the lining of both cornua, some sixty processes, averaging 1 cm. in diameter, circular in form, about 6 mm. in height and having a marked depression in the center about 2 mm. in diameter. The surfaces were irregular and fringed. Histologically they consisted of a dense collection of utricular glands, cylindrical in form and lined by a single layer of large cylindrical epithelium not well ciliated. The glands were separated from each other by a stroma, peculiar in that it seemed to be of embryonal tissue, exceedingly rich in cells and with very faintly defined connective tissue fibres. The processes were of about equal size in both cornua, but were more shaggy and frondlike on the pregnant side. The foetal membranes were attached to many of the processes by velamentous bands rich in vessels.

[Note upon the size of the Utricular Glands in various animals]:—

The size of the endometrical glands seems to bear no ratio to the size of the animal itself. Measurements taken on the average sized glands in various species show wide variations in the diameter of the tubules, but a much less variation in the size of the individual epithelium cells. The glands meas-

ured were in the uteri of adult animals, in the non-pregnant state. There were as follows:—

Green Monkey.....	Average Diameter.....	1/100 inch
White Nosed Coati.....	“ “.....	1/200 inch
Vulpine Phalanger.....	“ “.....	1/200 inch
Malayan Civet.....	“ “.....	1/800 inch
Prairie Wolf.....	“ “.....	1/250 inch
Red River Hog.....	“ “.....	1/500 inch
Llama.....	“ “.....	1/800 inch
Lioness.....	“ “.....	1/400 inch
Thar.....	“ “.....	1/500 inch
Woolless Sheep.....	Pregnant.....	1/ 10 inch

RECURRENT OPHTHALMIA.

During the latter part of 1909 and first part of 1910 we had a horse referred to us suffering with recurrent ophthalmia or moon blindness. This affection, as suggested by its name, is supposed to have some relation to the lunar periods. Some points in our work showed that such may be the case. Attacks appeared not infrequently at the time of full moon, and in our only experimental infection 28 days elapsed between inoculation and a general ocular inflammation.

This affection manifests itself as a conjunctivitis early in the attack but rapidly progresses to an iridocyclitis and lastly to a panophthalmitis. After each attack the ball is smaller until it is so shrunken as to be sightless from chronic thickening and opacities. The causation is not known. The disease behaves not unlike an infectious one, remaining in a stud for years at a time. Not every horse may be affected. It has been connected with dampness, bad fodder, overwork and the like. Again others have connected it with malaria or rheumatism. Potapenke, Vigezzi, Koch and others have found various micro-organisms, no two of which seem to be the same. Even an animal organism like malaria has been described. [Whether or not malaria has anything to do with the disease, it must be said that our horse was favorably affected in regard to temperature as well as to the eye condition by repeated subcutaneous injections of Quinine Bisulphate.

(Grain XX daily)]. The attacks last five to nine days. One or both eyes may be attacked, and not uncommonly do they alternate. One eye may cease to have attacks while the other continues. The experiments here recorded were made with the idea of transmitting the disease to other horses. They were only partially successful.

During eight months the affected animal referred to us had six attacks of ophthalmia. The attack was observed on the first occasion, but during the second attack his anterior chamber was entered, the exudate aspirated and injected in the eye of a horse with apparently healthy eyes. The history of this second horse will be given later. The attacks of the first horse ranged from six to twelve days. Five of the six affected the left eye and one the right eye. In January, 1910, the left eye was used for further inoculation and, following this traumatism, complete recovery never took place. The corneal scar left by the needle track almost disappeared, but an inferior anterior synechia formed and was followed by a spreading opacity of the cornea, much wrinkling of the iris and opacity of the depths. After the fourth attack in this eye it was completely blind. Material was obtained from this eye during its last attack, but it was merely serous fluid containing a few blood cells and epithelium, but no bacteria.

In transferring the affection from this animal, the conjunctival sac was washed with 1-5000 Bichloride of Mercury solution and well rinsed with Salt solution. The anterior chamber was then entered with an aspirating needle and the exudate removed. This consisted of .4 cc. slightly turbid straw colored fluid containing a few shreds of lymph. Bacteriological cultures, moist and dry preparations were made from a part of this, while the remainder was introduced into the anterior chamber of the second horse. This animal's eye showed the effects of the traumatism for eight days and then was normal save for a small opaque spot in cornea left from needle puncture. After 23 days a small patch of lymph collected in the pupil. This increased slowly, accompanied by lachrymation until the 27th day when a sudden and violent conjunctivitis arose. The lymph in the anterior

chamber likewise suddenly increased and rapidly became pus, forming a hypopyon.

The conjunctivitis became purulent. The violent acute stage lasted five days and slowly subsided, leaving an ectropion with a densely injected bulbar conjunctiva, almost complete corneal opacity and an irregular contraction of iris, apparently due to several small synechiæ. The depths could not be seen because of the corneal condition. This stage of affairs remained during the rest of the animal's life, two months. He was permitted to live to see if an exacerbation of this chronic process or involvement of the other eye would appear. Such not occurring in two months, he was killed and the eyes removed.

Fluid removed from the left eye of the first horse when killed during the last attack, was injected into the anterior chamber of a third horse. This animal's eye received the operation well and the trauma had entirely disappeared when the animal died on the 8th day.

LABORATORY EXAMINATIONS.

From fluid removed from Horse Eye (No. 1) anaerobic cultures made on milk and blood serum, aerobic on blood serum, blood agar, glycerine agar; smears were made directly from the fluid and coagula upon slides and stained as follows: Loefflers, Grams, Giemsa. In all there are very few recognizable bodies. They are R. B. C., polynuclears and a very few small mononuclear cells. In regard to micro-organisms three structures present themselves. A well staining Gram positive rounded end rod of fairly uniform size but tending to grow in pairs and stain rather irregularly with Loeffler and Giemsa. These forms are sometimes almost dumb-bell in that they are bipolar, or even seem to have a constriction in their centre. Another form is peculiar and cannot be said to be recognized as a bacterium. It is circular, of fairly regular size and contour and in many places looks like a very large coccus. In Loeffler's stain it is colored deeply in the centre with a paler marginal zone and an unstained halo about it, which, however, is not like a capsule. In the Gram and Giemsa method it is deeply blue or purple with a refrac-

tile centre and very sharply outlined contour. These forms varied from three to five microns. The third form is a wavy delicate short mycelium-like thread. Smears from the cultures as made above showed chiefly a large Gram positive rounded end rod but which did not grow on plating out. Grew on aerobic media, not found on anaerobic.

The Gram positive bacterium would not grow beyond the fourth generation. It was not identified with any known species by the characters manifested, during the short time we were able to keep it alive but could be placed in the Hog Cholera group. The mycelium was found to be an aspergillus. In regard to the large coccus-like body, little can be added to the above description. Further examination did not reveal characters permitting us to place it among the protozoa. No evidence of division were seen. The body was quite uniform in appearance, varying only in size. Whatever this is, it seems to be an organized body.

Cultures from pus in anterior chamber of the second horse showed the palely staining rod, an aspergillus and *Micrococcus aquatilis*. The first was planted on horse serum bouillon, but did not grow after the first generation. These cultures were made after death, but the cultures made during the acute attack, direct from conjunctival sac contained such a host of organisms that no judgment could be formed of their relative importance. The polar staining rod was seen in smears. No large coccus-like bodies were observed at any time in the second horse. Fluid taken from the first horse's eye at death were sterile.

These observations are at variance with those of others, but such results are not unique in this respect. It seems as if the polar staining rod deserves some consideration, and we expect to devote some attention to it if another horse suffering with recurrent opthalmia come to our notice. The large coccus-like bodies are very interesting and may be protozoa. The finding of the amœbæ in the cases of Potapenko, increases their importance.

Before, during and after the fourth attack of the first horse 20 grains of Quinine Bisulphate were given hypodermically daily for 20 days. The attack was very mild. Before

the drug was given his temperature had ranged from 99° to 101° F. Immediately after the first dose the temperature fell to below 99° and remained at a very regular level during the entire twenty days. No malarial organisms were found in the blood.

I take pleasure in acknowledging with thanks the advice and assistance of Dr. H. M. Langdon and Dr. Saxon in this work.

LEUCOCYTE COUNTS MADE IN THE GARDEN.

E. A. SCHUMANN, HERBERT FOX.

The desirability of knowing the normal blood conditions of wild animals prompted Dr. Penrose to suggest to one of us, E. A. Schumann, to count the blood of apparently healthy animals. The taking of blood preparations from animals is beset with great difficulty, to say nothing of possible injury to the animal during its struggles. The few notes recorded below may serve as a guide to hematologists and biologists. We do not offer these as final, but merely as percentages of leucocytes from high counts in the best specimens of blood we could obtain from the respective animals. They are grouped according to Zoological classification.

Animal.	Polymorpho- nuclears.	Small Lymphocytes.	Large Lymphocytes.	Eosinophiles.	Special.	Notes.
	%	%	%	%		
Potto.....	20.	67.	7.1	5.9		
Rhesus Macac (Average 5 counts).....	30.2	61.4	5.6	2.8		
Raccoon-like Dog.....	62.2	32.	2.	3.8		
Swift Fox.....	65.	18.	13.	1.	3% Baso.	
Dingo.....	77.	15.4	3.8	3.8		
Timber Wolf.....	76.5	15.5	3.5	4.5		
Wild Cat.....	55.8	34.	7.	3.8		
Gray Ichneumon.....	52.6	44.4	2.3	7.		
Indian Paradoxure.....	66.	20.	14.	0.		
Large Spotted Civet.....	60.	31.2	1.2	7.6		
Ocelot.....	79.	15.6	3.5	1.9		
Texas Skunk.....	44.1	46.3	4.3	5.3		a
Tayra.....	75.6	19.2	4.1	1.1		
White-Nosed Coati.....	60.	20.	18.	2.		b
Crab Eating Raccoon.....	45.	42.	2.5	10.5		
Ring-Tailed Bassaris.....	39.2	54.7	4.3	1.8		
Kinkajou.....	47.4	42.5	6.	4.1		
Common Raccoon.....	46.	42.9	7.4	3.7		
Texas White-Footed Mouse....	67.	19.	11.	3.		
Kangaroo Rat.....	55.	33.	6.	5% X cells.	c
Polecat.....	42.4	54.6	2.1	.9		
Common Opossum.....	44.	39.	7.	9.	1% Mast cells.	d
Bridled Wallaby.....	58.3	38.8	2.	4.2		
Six-Banded Armadilla.....	57.1	23.2	6.3	13.4		
Echidua omitted, not satis- factory.						
Elephant.....	15.	47.4	7.6	5.8	{ Bilobed 23.8 Basophile .4 }	e

(a) There are several grades of eosinophilic granulations, ranging from very fine to very coarse. They are entirely discrete, however, and the eosinophile cells are quite distinct from the homogeneous neutrophils.

(b) The protoplasm of the leucocytes shows practically no stain. Mitotic figures are frequent among the polymorphonuclear cells. The small lymphocytes show basophilic granules.

(c) Many leucocytes were noted, with deeply staining nuclei filling up most of the cells. The protoplasm was colored a deep brown. These were called x cells pending investigation.

(d) Polynuclears quite large, with deeply staining nuclei which are in many instances entirely separate and distinct.

(e) The ordinary polymorphonuclears are very few in number, and those seen have nearly all a faint acidophilic or basophilic character. The eosinophiles are quite distinct and their granulations are large and globular. The cells called bilobed are unusual and can probably best be accounted for as directly dividing small lymphocytes. The staining properties and shape of the nuclei of the bilobed cells are most closely related to these lymphocytes. They are not always regular, however, but may be almost as irregular as the polynuclears. In practically every instance, however, a connecting isthmus may be found between the spherical nuclear portions. No mitotic figures seen. The protoplasm is homogeneous and pale blue or lilac and in relatively large amount. No granules were ever seen.

Respectfully submitted.

HERBERT FOX, M.D., *Pathologist.*

LIST OF ADDITIONS TO THE MENAGERIE DURING THE YEAR
ENDING FEBRUARY 28TH, 1911.

1910

- March 1. 2 American wild cats (♂ and ♀) presented by Dr. Norton Downs, Three Tuns, Pa. 2 blood-rumped parakeets and 1 scaly-breasted lorikeet purchased.
- " 3. 1 Barbary turtle dove presented by John Cavanaugh, Philadelphia.
- " 6. 1 alligator presented by Dr. F. Hurst Maier, Philadelphia.
- " 9. 4 spotted terrapins purchased.
- " 13. 1 alligator presented by A. E. Conn, Philadelphia.
- " 19. 1 alligator presented by Master B. A. Tunnell, Germantown, Philadelphia.
- " 21. 1 grivet monkey (♂) born in the Garden.
- " 22. 1 Bactrian camel (♂) born in the Garden. 1 yellow-fronted amazon presented by Mrs. William Stock, Philadelphia. 1 Barbary turtle dove presented by Mrs. Louise Steinhauer, Philadelphia.
- " 24. 1 blue and yellow macaw presented by Mrs. William C. Simmins, Philadelphia.
- " 26. 3 raccoons born in the Garden. 4 alligators presented by Albert Wolf, Philadelphia.
- " 28. 1 white-fronted amazon presented by Alfred Wagler, Germantown, Philadelphia. 2 garter snakes presented by F. W. Cressey, Philadelphia.
- " 29. 1 Indian antelope (♀) born in the Garden.
- " 30. 2 golden pheasants, 1 pin-tailed duck, 2 Venezuela parakeets and 2 chestnut-breasted finches purchased. 7 black snakes, 2 common garter snakes, 1 chicken snake, 1 king snake, 2 hog-nosed snakes, 4 brown water snakes, 1 Cyclops water snake and 2 whip snakes purchased.
- " 31. 1 barred owl presented by Evelyn Wright, Philadelphia. 1 alligator presented by E. C. Pangborn, Philadelphia.
- April 4. 2 flying squirrels born in the Garden.
- " 6. 1 common deer (♀) presented by Dr. Norton Downs, Three Tuns, Pa. 1 common water snake and 2 painted terrapins presented by F. W. Cressey, Philadelphia. 1 fire-bellied toad presented by H. W. Walters, Philadelphia.
- " 7. 4 raccoons born in the Garden. 2 jackdaws, 2 globose currawongs and 2 rufous-vented guans purchased. 1 American bittern presented by Capt. McDonald, s. s. Lassell.
- " 8. 1 Himalayan tahr (♀), 3 Indian rat snakes, 5 black snakes, 1 chicken snake, 1 corn snake, 1 Sacken's garter snake, 1 hog-nosed snake and 1 ring-necked snake purchased.
- " 9. 1 alligator presented by Elmer Fischer, Philadelphia. 1 ground rattlesnake, 1 harlequin snake, 11 black snakes, 2 chicken snakes, 1 Sacken's garter snake, 1 keeled green snake, 10 hog-nosed snakes, 3 indigo snakes, 5 king snakes, 3 banded water snakes and 1 brown water snake purchased.
- " 10. 1 common linnet presented by P. F. Harpel, Philadelphia.
- " 13. 1 woodchuck (♂) presented by James Whalan, Philadelphia.

- April 16. 1 golden-shafted woodpecker presented by Mrs. C. Roeder, Philadelphia.
- " 17. 2 aoudads (♂ and ♀) born in the Garden.
- " 18. 1 alligator presented by F. Lincoln Bunting, Philadelphia. 1 alligator presented by Frederick W. Kaplan, Germantown, Philadelphia.
- " 19. 2 Malabar parakeets, 2 diamond rattlesnakes, 1 ground rattlesnake, 2 harlequin snakes, 4 American green lizards, 7 wave-lined lizards and 4 gopher tortoises purchased.
- " 21. 1 American elk (♂) purchased.
- " 22. 2 white-whiskered paradoxures (♂ and ♀), 2 blood-breasted pigeons, 2 scaly-breasted lorikeets, 2 blossom-headed parakeets, 2 silver-eared liothrix, 1 black-headed sibia and 6 European tree toads purchased. 1 alligator presented by John W. Bomeisen, Philadelphia.
- " 23. 2 gray-breasted parakeets purchased. 1 alligator presented by William Osswald, Philadelphia.
- " 25. 3 western diamond rattlesnakes purchased.
- " 27. 3 Dekay's snakes, 5 keeled green snakes, 15 ring-necked snakes, 1 red-eared terrapin and 5 soft-shelled turtles presented by Arthur W. Clime, Philadelphia.
- " 28. 1 opossum (♂) and 1 woodchuck (♀) presented by Adams Express Company, Philadelphia.
- May 1. 1 common water snake and 2 bull frogs presented by V. H. Zoll, Philadelphia. 1 orange-winged amazon presented by Robert L. VanDusen, Philadelphia.
- " 3. 2 Ross' geese purchased. 1 weeper cebus (♀) presented by Harry Bidwell, Philadelphia. 3 painted terrapins presented by F. W. Cressey, Philadelphia.
- " 5. 1 striped water snake presented by Master William A. Tucker, Philadelphia.
- " 6. 3 Canada geese born in the Garden.
- " 8. 1 American elk (♀) purchased.
- " 9. 1 hamadryas baboon (♂), 1 sooty mangabey (♂), 1 one-wattled cassowary and 2 Himalayan jays purchased. 5 summer ducks born in the Garden.
- " 13. 6 Amherst pheasants born in the Garden. 1 herring gull presented by Mrs. H. E. Styles, Holly Beach, N. J.
- " 14. 4 yellow-bellied black snakes, 2 elegant bull snakes, 6 hog-nosed snakes, 7 Say's pine snakes, 6 Holbrook's water snakes, 1 whip snake and 1 collared lizard purchased.
- " 15. 1 milk snake presented by Horace J. Geddes, Philadelphia.
- " 16. 6 pine snakes purchased.
- " 17. 4 mute swans born in the Garden. 2 alligators presented by Master Jack Labe, Philadelphia.
- " 18. 2 Amherst pheasants born in the Garden.
- " 19. 1 alligator presented by Masters Gordon and John French, Philadelphia.
- " 20. 4 snow geese, 4 Hutchin's geese, 4 white-fronted geese and 7 mallard ducks purchased.
- " 21. 5 Swinhoe's pheasants born in the Garden. 1 box tortoise presented by Harry R. Barber, Philadelphia.

- May 22. 1 least bittern presented by Master Stephen Foust, Philadelphia.
- " 23. 3 Canada geese born in the Garden. 1 musk turtle and 1 spotted terrapin presented by William Beisel, Philadelphia. 1 young milk snake presented by William Shingle, Philadelphia.
- " 24. 1 Somali ostrich (♀), 2 upland geese, 2 bar-headed geese and 1 Reeves' pheasant purchased.
- " 26. 1 pig-tailed macaque (♀) and 1 sooty mangabey (♂) presented by Prof. Lightner Witmer, University of Pennsylvania.
- " 27. 2 isabelline gazelles (♂ and ♀), 1 diamond rattlesnake, 3 ground rattlesnakes, 4 harlequin snakes, 1 yellow-sided snake and 1 fence lizard purchased. 1 green-cheeked amazon presented by Henry Kerling, Philadelphia.
- " 27. 1 Japanese deer (♀) born in the Garden.
- " 29. 1 alligator presented by Leonard Kohn, Philadelphia.
- June 1. 2 sable antelopes (♂ and ♀), 1 mustache monkey (♂), 1 scaly-breasted lorikeet, 3 cutthroat finches, 3 chestnut-eared finches and 1 sulphur-breasted toucan purchased. 14 cerberus snakes presented by F. Mitchell, New York.
- " 2. 3 hybrid sea gulls born in the Garden.
- " 3. 1 common deer (♀) born in the Garden. 1 western skunk (♂), 1 prairie rattlesnake, 3 yellow-bellied black snakes, 3 elegant bull snakes, 1 Marcy's garter snake, 3 red-sided garter snakes, 3 indigo snakes, 3 western sand snakes, 1 Graham's water snake, 3 whip snakes and 4 common horned lizards purchased.*
- " 4. 3 Richardson's kangaroo rats, 4 thirteen-striped gophers and 6 bull frogs purchased. 1 Amherst pheasant born in the Garden.
- " 9. 1 yellow-fronted amazon presented.
- " 11. 2 raccoons (♂♂) born in the Garden.
- " 12. 1 alligator presented by Mrs. A. J. Karchner, Philadelphia.
- " 13. 17 prairie dogs purchased. 1 garter snake, 1 DeKay's snake and 2 water snakes presented by F. W. Cressey, Philadelphia.
- " 14. 1 great-horned owl presented by Edward Gaunt, Mullica Hill, N. J.
- " 16. 1 Pennant's parakeet and 2 blue-bonnet parakeets purchased.
- " 17. 1 eastern diamond rattlesnake and 1 ground rattlesnake purchased.
- " 18. 1 white-collared mangaey (♂), 2 Japanese teal (♂ and ♀) and 1 Indian koel (♂) purchased.
- " 19. 1 wood pigeon born in the Garden.
- " 20. 3 box tortoises presented by William Beisel, Philadelphia. 1 alligator presented by Mrs. J. Kueger, Philadelphia.
- " 21. 1 huanaco (♂) born in the Garden.
- " 22. 1 white-beaded gnu (♂) born in the Garden. 1 ocelot (♂) purchased.
- " 23. 1 screech owl presented by Joseph P. Lance, Philadelphia. 10 copperhead snakes, 1 mountain black snake, 1 hog-nosed snake and 4 water snakes purchased.
- " 24. 1 pine snake presented by Alfred Entekin, Philadelphia. 2 wave-lined lizards presented by Andrew Kolb, Philadelphia.
- " 25. 1 Japanese deer (♀) born in the Garden.
- " 26. 1 diamond-backed terrapin presented by Jasper N. Walton, Philadelphia.

- June 27. 1 Virginia deer (♂) born in the Garden.
 " 28. 1 Cape ratel (♀), 2 collared peccaries (♀ ♀), 2 long-tailed glossy starlings, 2 striated colys and 2 gigantic zonurus purchased. 1 collared peccary (♂) exchanged.
 " 29. 1 Burchell's zebra (♀), 1 leopard (♂) and 1 long-tailed weasel purchased.
 " 30. 1 Indian antelope (♂) born in the Garden. 6 great blue herons purchased. 1 American crow presented by Masters Walter and Joseph Flick, Philadelphia.
- July 2. 1 pine snake and 3 hellbenders purchased. 1 sparrow hawk presented by J. W. Tatum, Philadelphia.
 " 10. 1 puma (♂) born in the Garden.
 " 11. 1 Eskimo dog (♂) presented by Dr. R. N. Keely, Brown's Mills-in-the-Pines, N. J.
 " 15. 1 Levaillant's amazon presented by W. H. Berger, Philadelphia.
 " 16. 1 Japanese deer (♀) born in the Garden. 1 milk snake presented by Charles E. Ritter, Philadelphia.
 " 17. 4 bull frogs presented by V. H. Zoll, Philadelphia.
 " 18. 1 ocelot (♀) purchased. 1 canary and 1 green-cheeked amazon. presented by Mrs. E. H. Howe, Philadelphia. 1 pine snake presented by Joe Todd, Philadelphia. 1 red salamander presented by Dr. A. Parker Hitchens, Glenolden, Pa.
 " 22. 2 Egyptian spiny mice purchased. 1 garter snake presented by Master Russell J. Black, Philadelphia.
 " 23. 3 night herons born in the Garden.
 " 26. 1 woodchuck (♀) presented by Charles H. Stevenson, Germantown, Philadelphia.
 " 28. 6 black ducks and 5 Marcy's garter snakes born in the Garden.
 " 31. 1 alligator purchased.
- Aug. 3. 7 redhead ducks born in the Garden.
 " 4. 1 mule deer (♀) purchased.
 " 5. 1 Indian antelope (♀) born in the Garden.
 " 6. 2 flying squirrels presented by Master Horace and Miss Caroline Beitzel, Philadelphia.
 " 9. 1 Egyptian cobra and 2 common iguanas purchased.
 " 10. 1 alligator presented by Paul B. Trumpoldt, Philadelphia.
 " 11. 1 porose crocodile purchased. 1 screech owl presented by Mrs. William Derry, Roxborough, Philadelphia.
 " 12. 11 common water snakes and 1 striped water snake presented by D. H. March, Philadelphia. 10 garter snakes born in the Garden.
 " 13. 2 Japanese bears (♂ and ♀), 1 white-browed amazon, 1 golden-headed conure, 2 double-striped thicknees, 2 Nile crocodiles, 1 Wagler's viper and 2 Greek tortoises purchased. 2 Cooper's hawks presented by Robert H. Schilling, New York.
 " 24. 2 menobranchus presented by Herman Walters, Philadelphia.
 " 26. 2 European glass snakes, 2 dark-green snakes, 3 spotted snakes, 6 European green lizards and 5 Moorish geckos purchased.
 " 31. 4 banded rattlesnakes purchased. 1 alligator presented by Masters Frederick, Christofer and William Wagner, Hanover, Pa.
- Sept. 1. 6 banded rattlesnakes purchased.
 " 3. 1 rhesus macaque (♂) born in the Garden.

- Sept. 5. 1 smooth green snake and 1 milk snake presented by Samuel Scoville, Philadelphia. 1 alligator presented by Joseph Schonder, Philadelphia.
- " 12. 10 common water snakes born in the Garden.
- " 13. 1 variegated cebus (♂), 2 hamadryas baboons (♂♂), 1 Malayan tapir (♀), 1 Angolan vulture, 2 scaly-breasted parakeets, 1 red-topped amazon, 2 crimson finches, 2 European magpies, 2 European blue jays, 1 cutthroat finch, 6 amadavine finches, 2 Japanese nuns, 2 hooded finches, 2 weavers, 2 bishop weavers, 2 yellow-bellied liothrix, 1 common waxbill, 1 St. Helena finch, 2 Senegal fire finches, 2 green waxbills, 2 spotted munias and 2 red-headed cardinals purchased.
- " 15. 1 white-fronted amazon presented by J. F. Wilson, Philadelphia.
- " 16. 2 masked grass finches and 2 singing seed-eaters purchased.
- " 17. 1 alligator presented by Ralph M. Bair, Glenside, Pa.
- " 18. 1 alligator presented by R. G. Ringgold, Philadelphia.
- " 20. 1 white-throated monkey (♀) and 1 talapoin monkey (♂) purchased.
- " 22. 1 banded ichneumon (♂) and 3 hamsters (♂s) purchased. 1 banded rattlesnake presented by John B. Smyth, Renova, Pa.
- " 23. 1 bald eagle, 1 European blackbird, 1 song thrush, 2 black-crested cardinals, 2 banded parakeets and 2 all-green parakeets purchased.
- " 24. 7 copperheads and 5 ground rattlesnakes born in the Garden.
- " 25. 1 common waxbill presented by P. F. Harpel, Philadelphia.
- " 26. 1 Levaillant's amazon presented by Mrs. L. J. Lewis, Philadelphia.
- " 27. 1 pine snake presented by W. F. Lincoln, Pemberton, N. J.
- " 29. 2 common dormice purchased. 1 alligator presented by Dr. H. D. Martien, Philadelphia.
- Oct. 1. 1 fish hawk presented by Miss M. E. Noecker, Camden, N. J.
- " 4. 1 squirrel-tailed dormouse (♀), 2 oak dormice (♂♂), 2 common jerboas (♂ and ♀), 2 great African jerboas, 2 Pretre's tanagers, 2 Cuban bulfinches, 1 yellow-headed blackbird, 2 melodious finches, 2 elegant finches, 1 golden-fronted woodpecker, 2 gray monitors and 2 Cuban spiny lizards purchased.
- " 5. 2 red-skinned garter snakes, 6 hog-nosed snakes, 3 indigo snakes, 6 Say's pine snakes, 3 Western sand snakes, 3 banded water snakes, 1 Graham's water snake, 3 Holbrook's water snakes and 3 whip snakes purchased.
- " 8. 1 Blyth's monkey (♀) and 2 large Egyptian gerbilles purchased. 2 collared peccaries born in the Garden.
- " 10. 2 water moccasins, 3 ground rattlesnakes, 5 black snakes, 1 chicken snake, 1 common garter snake, 2 Sacken's garter snakes, 3 hog-nosed snakes, 2 king snakes, 1 brown water snake and 6 whip snakes purchased.
- " 14. 1 pine snake presented by Lieut. Edgar Donovan, Eleventh Police District, Philadelphia.
- " 15. 2 alligators presented by Dr. Andrew Callahan, Philadelphia.
- " 18. 1 red-tailed buzzard presented by H. H. Augustine, Philadelphia. 1 screech owl presented by Mrs. H. R. Thomas, Philadelphia.

- Oct. 19. 1 American elk (♀) born in the Garden. 1 alligator presented by J. Foster Ogden, Philadelphia.
- " 20. 2 ground rattlesnakes, 9 black snakes, 1 chicken snake, 2 harlequin snakes, 2 Sacken's garter snakes, 1 keeled green snake, 3 hog-nosed snakes, 1 indigo snake, 3 king snakes, 1 rainbow snake, 1 slender snake and 1 corn snake purchased.
- " 25. 1 gray fox (♂) presented by E. Stanley Dailey, Philadelphia.
- " 27. 4 gopher tortoises purchased. 1 alligator presented by Estella Hamilton, Philadelphia.
- " 28. 1 American bison (♂) born in the Garden. 1 opossum (♀) presented by Messrs Cugley and Mullen, Philadelphia. 1 common coot presented by Miss C. H. Fagan, Philadelphia.
- " 29. 1 prairie wolf (♂) presented by Robert W. A. Wood, Wayne, Pa.
- " 30. 1 Indian antelope (♀) born in the Garden.
- Nov. 1. 1 gray fox (♀) presented by S. Delbert, Jr., Media, Penna.
- " 2. 1 prairie rattlesnake, 5 red-skinned garter snakes, 2 hog-nosed snakes, 1 Holbrook's water snake, 1 whip snake, 1 Say's king snake, 3 yellow-bellied black snakes and 5 Say's pine snakes purchased.
- " 4. 7 common opossums (3♂s and 4♀s) presented by J. H. Walter, Philadelphia.
- " 6. 1 barn owl presented by Joseph W. Lewis, Philadelphia.
- " 7. 2 Coquerel's dwarf lemurs (♂ and ♀), 1 Madagascar tree boa, 1 banded water snake, 3 ground rattlesnakes, 2 harlequin snakes, 1 king snake and 1 whip snake purchased.
- " 9. 1 diamond rattlesnake, 1 water moccasin, 1 harlequin snake, 1 king snake, 1 indigo snake and 1 scarlet snake purchased.
- " 10. 2 dormouse dwarf lemurs (♂♂) purchased.
- " 15. 2 Campbell's monkeys (♀ ♀) purchased.
- " 20. 1 llama (♂) born in the Garden. 1 alligator presented by Allan J. Henderson, Philadelphia.
- " 26. 2 painted terrapins and 1 musk turtle presented by Master Richard Schwoebel, Philadelphia.
- " 27. 1 DeKay's snake presented by H. D. Steel, Philadelphia. 1 alligator presented by Stirling Alexander, Chestnut Hill, Philadelphia.
- " 29. 1 sparrow hawk presented by Mrs. Joseph Rose, Philadelphia.
- Dec. 2. 2 pumas purchased.
- " 9. 1 blue and yellow macaw presented by William B. Sheppard, Philadelphia.
- " 15. 2 green jays and 2 black spur-winged geese purchased.
- " 16. 2 American wild cats (♂ and ♀) presented by Dr. Norton Downs, Three Tuns, Pa.
- " 18. 1 Levaillant's amazon presented by Mrs. A. Datz, Philadelphia. 1 lesser sulphur-crested cockatoo presented by Mrs. Alice Dempsey, Philadelphia.
- " 21. 1 boa constrictor purchased. 2 Sebastopol geese exchanged.
- " 23. 1 great horned owl presented by P. Rohr, Philadelphia.
- " 25. 1 diamond rattlesnake presented by N. P. Fry, St. Petersburg, Florida.
- " 27. 1 Cooper's hawk presented by Robert Macneur, Philadelphia.
- " 31. 1 Swainson's lorikeet and 1 scaly-breasted lorikeet purchased.

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- Jan. 3. 1 alligator presented by Jerome Holloway, Philadelphia.
 " 4. 1 Gray's thrush purchased.
 " 7. 2 prairie wolves (σ^7 and φ) presented by Training School, Vine-
 land, N. J.
 " 10. 1 Indian antelope (σ^7) born in the Garden.
 " 11. 4 passerine parakeets purchased. 1 emperor boa presented by
 W. V. Silver & Co., Philadelphia.
 " 17. 2 gray wolves (σ^7 and φ), 2 black-backed jackals (σ^7 and φ),
 2 Victoria crowned pigeons, 2 garter snakes, 2 water snakes,
 and 3 western brook frogs purchased.
 " 18. 1 American bison (φ) exchanged.
 " 21. 1 Brazilian ocelot (σ^7) presented by Frank Bond, Philadelphia.
 1 Cooper's hawk presented by Mrs. H. Hazelton, Phila-
 delphia.
 " 15. 4 white-nosed coatis (2 σ^7 s and 2 φ s) purchased.
 " 28. 1 yellow-fronted amazon presented by Dr. J. H. Musser, Phila-
 delphia.
- Feb. 1. 2 mongoose lemurs ($\sigma^7\sigma^7$), 1 blood-breasted pigeon and 2 white-
 crowned pigeons purchased. 1 golden eagle presented by
 James Green, Philadelphia.
 " 2. 1 yellow baboon (σ^7) born in the Garden. 1 red monkey (σ^7) and
 2 St. Thomas conures purchased.
 " 4. 1 Barbary ape (φ) purchased. 1 screech owl presented by Miss
 Mabel Remsen, Philadelphia.
 " 5. 1 grivet monkey (φ) born in the Garden.
 " 13. 1 golden eagle presented by John L. Dallam, Philadelphia.
 " 15. 1 alligator presented by Mrs. E. L. Beechey, Ardmore, Pa.
 " 20. 1 painted terrapin presented by J. Edgar Strawbridge, Philadelphia.
 " 24. 1 gray fox (φ) presented by F. J. Stackhouse, Chadd's Ford, Pa.
 " 25. 2 anolis lizards presented by Master David G. Brinton Thompson,
 Philadelphia.
 " 26. 2 American wild cats ($\sigma^7\sigma^7$) presented by Dr. Norton Downs,
 Three Tuns, Pa.
 " 28. 1 green-cheeked amazon presented by Mrs. Antoinette Barnes,
 Philadelphia.



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